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First Named Inventor:	DATTILO, JEROME P.		
Application No.:	10/658019	Group Art Unit:	2839
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Title:	INTERCONNECT SYSTEM		

BRIEF ON APPEAL

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9-30-05 Melanie Gover
Date Signed by: Melanie G. Gover

Dear Sir:

This is an appeal from the Office Action mailed on March 30, 2005, finally rejecting claims 1-16.

A Notice of Appeal in this application was mailed on June 30, 2005, and was received in the USPTO on June 30, 2005.

The fee required under 37 CFR § 41.20(b)(2) for filing an appeal brief should be charged to Deposit Account No. 13-3723.

Appellants request the opportunity for a personal appearance before the Board of Appeals to argue the issues of this appeal. The fee for the personal appearance will be timely paid upon receipt of the Examiner's Answer.

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REAL PARTY IN INTEREST

The real party in interest is 3M Company (formerly known as Minnesota Mining and Manufacturing Company) of St. Paul, Minnesota and its affiliate 3M Innovative Properties Company of St. Paul, Minnesota.

RELATED APPEALS AND INTERFERENCES

Appellants are unaware of any related appeals or interferences.

STATUS OF CLAIMS

Claims 1-16 are pending. Claims 1-16 stand rejected.

STATUS OF AMENDMENTS

No amendments have been filed after the final rejection.

SUMMARY OF CLAIMED SUBJECT MATTER

The claims at issue concern interconnect systems that use surface mount technology for mating conductive pins in a header connector to surface mount pads on a printed circuit board.

Independent Claim 1 provides a header connector comprising:

(a) a header body having a front wall, the front wall having a plurality of first and second passageways disposed between an internal surface and an external surface;

(b) a plurality of conductive pins configured for insertion into the first passageways, each conductive pin having a first end extending from the internal surface, an intermediate section disposed in the first passageway, and a truncated second end extending from the external surface of the front wall for surface mount contact, wherein the conductive pins are not fully inserted into the first passageway; and

(c) a plurality of shield blades configured for insertion into the second passageways, each shield blade having a first end extending from the internal surface, an intermediate section disposed in the second passageway, and a second end extending from the external surface of the front wall.

The subject matter of claim 1 is described in the specification, e.g., at p. 2, lines 1-11, p. 7, lines 13-24, and Fig. 3.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

First Ground of Rejection

Claims 1, 4-5, 7-8, 11 and 13-16 stand rejected under 35 USC § 102(b) as purportedly being anticipated by Kandybowski (U.S. Patent 5,174,764).

Second Ground of Rejection

Claims 1 and 6 stand rejected under 35 USC § 103(a) as purportedly being unpatentable over Ramey (U.S. Patent 6,231,391) in view of Bright (U.S. Patent 4,726,793).

Third Ground of Rejection

Claims 2 and 9 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Kandybowski in view of Bright (U.S. Patent 4,726,793).

Fourth Ground of Rejection

Claims 3 and 10 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Kandybowski in view of Bright (U.S. Patent 4,726,793).

Fifth Ground of Rejection

Claims 7 and 12 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Ramey in view of Kandybowski.

ARGUMENT

First Ground of Rejection

Claims 1, 4-5, 7-8, 11 and 13-16 stand rejected under 35 USC § 102(b) as purportedly being anticipated by Kandybowski (U.S. Patent 5,174,764).

Applicants assert that the rejection of claims 1, 4-5, 7-8, 11 and 13-16 under 35 USC § 102(b) should be reversed based on the following.

The Office Action states in part:

> Regarding claim 1, Kandybowski discloses a header connector 20 comprising: a header body 22 having a front wall 29, the front wall 29 having a plurality of first and second passageways 34 disposed between an internal surface and an external surface; a plurality of conductive pins 50 configured for insertion into the first passageways 34, each conductive pin 50 having a first end extending from the internal surface, an intermediate section disposed in the first passageway, and a surface mounting 28 extending from the external surface of the front wall 29 for surface mount contact 54, (figure 5), wherein the conductive pins 50 are not fully inserted into the first passageway (see figure 5) a plurality of shield blades 76 configured for insertion into the second passageways, each shield blade 76 having a first end extending from the internal surface, an intermediate section disposed in the second passageway, and a second end extending from the external surface of the front wall.

Applicants respectfully submit that according to MPEP 2131 "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." (citing *Verdegall Bros. v. Union Oil Co. of California, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987)).*

The Office Action states that the conductive pins 50 are not fully inserted into the first passageway as illustrated in Figure 5 of Kandybowski. However, Kandybowski states at col. 4, lines 9-18:

> "As can be seen in FIGS. 5 and 6 the free end of second transverse portion 68 is spaced from the terminal portion 52 to allow the spring arm 60 to move compliantly toward the terminal member 50 during insertion of the terminal member 50 into the housing passageway 34. Upon full insertion of first terminal member 50 into passageway 34, the leading end of the second transverse portion 68 moves away from the terminal body section 52 when the retention means 66 engages the housing retention surface 42." (emphasis added)

In the Response to Argument section of the Office Action mailed on March 30, 2005, the Examiner states:

> Applicant, on the remarks, page 7, lines 1-3, argues that Kandybowski does not disclose a fully inserted terminal member. The Examiner respectfully disagrees. Because figure 5 near to the leadline still has spaced which shows that its terminal is not fully insert compared to figure 6.

Applicants are somewhat confused by the above statements. It is Applicants' position that Kandybowski does disclose a fully inserted terminal member in Fig. 5. Applicants submit

that the space near the stop surface 58 allows for compression of spring arm section 60 as shown in Fig. 6. This can be seen by comparing the position of transverse portion 68 in relation to biasing surface 44 between Figs. 5 and 6. As noted above, Kandybowski clearly states that upon full insertion of first terminal member 50 into passageway 34, the leading end of the second transverse portion 68 moves away from the terminal body section 52 when the retention means 66 engages the housing retention surface 42. This describes the position shown in Fig. 5.

Accordingly, the reference does not describe every element of the claimed invention.

Based on the foregoing, Applicant(s) submit that the cited reference cannot support a 35 U.S.C. 102 (b) rejection and respectfully requests that the rejection be withdrawn.

Second Ground of Rejection

Claims 1 and 6 stand rejected under 35 USC § 103(a) as purportedly being unpatentable over Ramey (U.S. Patent 6,231,391) in view of Bright (U.S. Patent 4,726,793).

Applicants assert that the rejection of claims 1 and 6 under 35 USC § 103(a) should be reversed based on the following.

The Office Action states in part:

> Regarding claim 1, Ramey discloses a header connector 400 comprising: a header body 402 having a front wall 410, the front wall 410 having a plurality of first and second passageways 416, 418 disposed between an internal surface and an external surface 422, 424; a plurality of conductive pins 404 configured for insertion into the first passageways 416, each conductive pin 404 having a first end extending from the internal surface, an intermediate section disposed in the first passageway 416, and a surface mounting 452 extending from the external surface of the front wall 410, wherein the conductive pins 410 are inserted into the first passageway a plurality of shield blades 406 configured for insertion into the second passageways 418, each shield blade 406 having a first end extending from the internal surface 422, an intermediate section disposed in the second passageway 418, and a second end extending from the external surface of the front wall 410. Terms "not fully inserted" sets for no clear limitation in absence of "pin moves when mounted" terms see claim 4. Randy discloses the claimed invention except for surface mount contact. Bright discloses the surface mount contact at figure 7a, Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Randy to provide the surface mount contact as taught by Bright so as to save expensive of forming holes in the printed circuit board.
>
> Regarding claim 6, Ramey discloses the intermediate portion of the shield blade 406 has a generally right angle shield portion.

Applicants respectfully submit that according to MPEP 2142, to establish a case of prima facie obviousness, three basic criteria must be met: 1) there must be some suggestion or

motivation, either in the references or generally known to one skilled in the art, to modify or combine reference teachings, 2) there must be reasonable expectation of success, and 3) the prior art references must teach or suggest all the claim limitations. The ability to modify the method of the references is not sufficient. The reference(s) must provide a motivation or reason for making the changes. *Ex parte Chicago Rawhide Manufacturing Co., 226 USPQ 438 (PTO Bd. App. 1984).*

The Office Action states that the conductive pins 404 in Ramey have a surface mounting 452 extending from the external surface of the front wall 410. However, first end 452 of conductive pin 404 extends from surface 422, which is stated in Ramey to be the internal surface of the front wall 410. (*See* Ramey, col. 11, lines 40-48) It is second end 454 of pin 404 that extends from external surface 424 of front wall 410. (*See* Ramey, Fig. 15) First end 452 is configured for insertion into cantilevered beams 208 of receptacle contact 204 (*See* Ramey, col. 8, lines 12-16) and is therefore not a surface mount. (*See* Ramey, col. 8, lines 12-16) Second end 454 is configured for insertion into opening 36 in a printed circuit board 34 (*See* Ramey, col. 11, lines 59-61) and is therefore not a surface mount.

In the Response to Argument section of the Office Action mailed on March 30, 2005, the Examiner essentially states:

> Applicant, on page 8, argues that Ramey in view of Bright do not provide a motivation or suggest for replacing the feed-through contacts of Ramey with the surface mount contacts of Bright because it would require redesigning the board, the header and the pin to have surface contact. This is not persuasive. Because by surface mount contact can save requirement to form hole into printed circuit board. Moreover, by Ramey figure 14a also shows the mount contact.

Applicants respectfully submit that the references cannot support a case of *prima facie* obviousness as to the claims because, among other possible reasons, the cited references do not provide a motivation or suggestion for replacing the feed-through contacts of Ramey with the surface mount contacts of Bright because the surface mount element 60 of Bright is not part of a pin but is a surface mount solder foot 60 of contact element 40, which is contained in socket 10. (*See* Bright, e.g., at col. 3, lines 33-45) Pins 28 of Bright are not surface mount pins, but instead are inserted into contact element 40. (*See* Bright, Figs. 7a-7b)

Although Fig. 14a of Ramey does suggest surface mount contacts, neither reference discloses or suggests a surface mount pin with a truncated end or a pin that is not fully inserted into the header body. Accordingly, the references do not describe every element of the claimed

invention. Additionally, Applicants reiterate that it would require redesigning the board, the header, and the pins to have surface mount contacts. Although the Examiner states that it would save the expense of forming holes in the printed circuit board, the Examiner has presented no evidence that a board configured for surface mount contacts would be less expensive than one configured to accept pin contacts.

Applicants do not understand the meaning of the Examiner's comment that "Terms 'not fully inserted' sets for no clear limitation in absence of 'pin moves when mounted' terms see claim 4." so this has not been specifically addressed herein by Applicants.

Based on the foregoing, Applicant(s) submit that the cited references will not support a 103(a) rejection of the claims invention and request that the rejection be withdrawn.

Third Ground of Rejection

Claims 2 and 9 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Kandybowski in view of Bright (U.S. Patent 4,726,793).

Applicants assert that the rejection of claims 2 and 9 under 35 USC § 103(a) should be reversed based on the following.

The Office Action states in part:

> Regarding claims 2 and 9, Kandybowski discloses the claimed invention except for the second end of the conductive pin does not contain a spring like element. Bright discloses the second end of the conductive pin does not contain a spring likeelement. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kandybowski to remove spring as taught by Bright so as to simplify contact.

Applicants respectfully submit that according to MPEP 2142, to establish a case of prima facie obviousness, three basic criteria must be met: 1) there must be some suggestion or motivation, either in the references or generally known to one skilled in the art, to modify or combine reference teachings, 2) there must be reasonable expectation of success, and 3) prior art references must teach or suggest all the claim limitations. The ability to modify the method of the references is not sufficient. The reference(s) must provide a motivation or reason for making the changes. *Ex parte Chicago Rawhide Manufacturing Co., 226 USPQ 438 (PTO Bd. App. 1984).*

Applicants incorporate by reference their response to the 102 (b) rejection based on Kandybowski, above, and respectfully submit that the references cannot support a case of prima facie obviousness as to the claims because, among other possible reasons, the cited references do

not provide a motivation or suggest for removing the spring element from the Kandybowski reference because the spring element is an integral part of the invention.

The Examiner states in the Response to Argument section of the Office Action having a mailing date of March 30, 2005:

> Page 9, applicant argues that the recite references do not provide a motivation or suggest for removing the spring element from the Kandybowski reference because the spring element is an integral part of the invention. The Examiner respectfully disagrees. The contact function properly even with no spring present just as the Bright contact functions without such spring.

However, the Summary of Invention section of Kandybowski states at col. 1, lines 57-62:

"The present invention is directed to a connector assembly having first terminal members that are surface mountable and include spring arm portions that increase the normal force between the mating terminal and the circuit pad while remaining remote from the current path between the circuit board and terminal." (emphasis added)

The Summary further states at col. 2, lines 34-39 and 46-51, respectively:

"It is an object of the present invention to provide a surface mount terminal having the shortest possible electrical path between a circuit board and a mating connector and concomitantly therewith include a spring biasing means to increase the normal force at the mounting surface." (emphasis added)

"It is a further object of the present invention to provide a surface mount terminal that has the increased compliancy of a spring arm without increasing the length of the current path nor affecting the range of manufacturing and assembly tolerances." (emphasis added)

As stated in *Bausch & Lomb, Inc. v. Barnes-Hind/Hydrocurve*, Inc., 796 F.2d 443, 230 USPQ 416 (Fed. Cir. 1986): It is impermissible within the framework of U.S.C. §103 to pick and chose from one reference only so much of it as will support a given position to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one skilled in the art. Applicants submit that because the spring arm in Kandybowski is necessary to fully appreciate what Kandybowski teaches, the Examiner is improperly using Kandybowski as a reference in this rejection.

Furthermore, there would be no motivation to modify the surface mountable pins of Kandybowski, which have spring arms, to have the features of the pins 28 of Bright, which are insertion mounted and are molded as an integral part of body member 26 or are riveted or molded into body member 26 (*See* Bright, col. 3, lines 16-21), because it would vitiate the objectives of the Kandybowski invention relating to the spring arms. As stated is *Ex Parte Hartmann*, 186 U.S.P.Q. 366, 367 (PTO Bd. App. 1974), references cannot properly be combined with each other when such would result in destroying that on which the invention of one of the references is based.

Based on the foregoing, Applicant(s) submit that the cited references will not support a 103(a) rejection of the claims invention and request that the rejection be withdrawn.

Fourth Ground of Rejection

Claims 3 and 10 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Kandybowski in view of Bright (U.S. Patent 4,726,793).

Applicants assert that the rejection of claims 3 and 10 under 35 USC § 103(a) should be reversed based on the following.

The Office Action states in part:

> Regarding claims 3 and 10, Kandybowski discloses the claimed invention except for the second end of the conductive pin is substantially flat. Bright discloses the conductive pin is substantially flat 60. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kandybowski to provide the conductive pin is substantially flat as taught by Bright so as better connection.

The Examiner essentially states that Bright discloses substantially flat conductive pins 60 and that it would have been obvious to make the conductive pins of Kandybowsi substantially flat as taught by Bright to obtain a better connection. However, element 60 of Bright is not a conductive pin, but is instead a solder foot on contact element 40 into which pin 28 is inserted (*See* Bright, e.g., at col. 3, lines 33-45). Solder foot 60 is attached to conductive pads 16 on circuit board 14 with solder paste (*See* Bright, col. 6, lines 6-56). Applicants also note that the ends of pins 28 of Bright are not substantially flat (*See* Bright, Figs. 7a-7b).

Applicants respectfully submit that according to MPEP 2142, to establish a case of prima facie obviousness, three basic criteria must be met: 1) there must be some suggestion or motivation, either in the references or generally known to one skilled in the art, to modify or

combine reference teachings, 2) there must be reasonable expectation of success, and 3) prior art references must teach or suggest all the claim limitations. The ability to modify the method of the references is not sufficient. The reference(s) must provide a motivation or reason for making the changes. *Ex parte Chicago Rawhide Manufacturing Co., 226 USPQ 438 (PTO Bd. App. 1984).*

Applicants incorporate by reference their response to the 102 (b) rejection based on Kandybowski, above, and further submit that the references cannot support a case of *prima facie* obviousness as to the claims because, among other possible reasons, the cited references do not provide a motivation or suggest for modifying the surface mount pins of Kandybowski to add the solder foot 60 of connector 40 of the Bright reference because the surface-mount pins in Kandybowski are not solder-mounted to the board. The Examiner has not indicated how the solder foot 60 of Bright would be combined with the pins of Kandybowski. In addition, although soldering the pins of Kandybowski to the board would provide a better connection, doing so would make it very difficult to easily disconnect connector 22 from circuit board 120. Applicants assert that such a change to the pins of Kandybowski would require redesigning the board, the header, and the pins.

Applicants further submit that the Examiner's combination of the Ramey and Bright references is based on improper hindsight. As stated in *In re Nomiya, Kohisa, and Matsumura,* 509 F.2d 566, 184 USPQ2d 607 (CCPA 1975): There must be a reason apparent at the time the invention was made to a person of ordinary skill in the art for applying the teaching at hand, or the use of the teaching as evidence of obviousness will entail prohibited hindsight.

Based on the foregoing, Applicant(s) submit that the cited references will not support a 103(a) rejection of the claims invention and request that the rejection be withdrawn.

Fifth Ground of Rejection

Claims 7 and 12 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Ramey in view of Kandybowski.

Applicants assert that the rejection of claims 7 and 12 under 35 USC § 103(a) should be reversed based on the following.

The Office Action states in part:

> Regarding claim 7 and 12, Ramey discloses the claimed invention except for the header connector is assembled to the printed circuit board each conductive pin of the header connector move in relation to the front wall of theheader body. Kandybowski discloses the header connector is assembled to the printed circuit board each conductive pin of the header connector move in relation to the front wall of the header body. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ramey to provide for the header connector is assembled to the printed circuit board each conductive pin of the header connector move in relation to the front wall of the header body as taught by Kandybowski so as to provide better connection.

Applicants respectfully submit that according to MPEP 2142, to establish a case of prima facie obviousness, three basic criteria must be met: 1) there must be some suggestion or motivation, either in the references or generally known to one skilled in the art, to modify or combine reference teachings, 2) there must be reasonable expectation of success, and 3) prior art references must teach or suggest all the claim limitations. The ability to modify the method of the references is not sufficient. The reference(s) must provide a motivation or reason for making the changes. *Ex parte Chicago Rawhide Manufacturing Co., 226 USPQ 438 (PTO Bd. App. 1984).*

Applicants incorporate by reference their responses to the 102 (b) rejections based on Kandybowski, above, and respectfully submit that the references cannot support a case of *prima facie* obviousness as to the claims because the cited references do not provide a motivation or suggestion for replacing the feed-through contacts of Ramey with the surface mountable spring contacts of Kandybowski. Incorporating the spring of Kandybowski into the pins of Ramey would require redesigning the board, the header, and the pins. Furthermore, as Applicants have previously stated, the pins of Kandybowski are fully inserted as shown and described in Fig. 5, so the references do not disclose every element of the present invention because they do not disclose pins that are not fully inserted into the header.

Based on the foregoing, Applicant(s) submit that the cited references will not support a 103(a) rejection of the claims invention and request that the rejection be withdrawn.

CONCLUSION

For the foregoing reasons, appellants respectfully submit that the Examiner has erred in rejecting this application. Please reverse the Examiner on all counts.

Respectfully submitted,

Sept. 30, 2005
Date

By: Melanie Gover
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CLAIMS APPENDIX

1. (Previously presented) A header connector comprising:

(a) a header body having a front wall, the front wall having a plurality of first and second passageways disposed between an internal surface and an external surface;

(b) a plurality of conductive pins configured for insertion into the first passageways, each conductive pin having a first end extending from the internal surface, an intermediate section disposed in the first passageway, and a truncated second end extending from the external surface of the front wall for surface mount contact, wherein the conductive pins are not fully inserted into the first passageway; and

(c) a plurality of shield blades configured for insertion into the second passageways, each shield blade having a first end extending from the internal surface, an intermediate section disposed in the second passageway, and a second end extending from the external surface of the front wall.

2. (Original) The header connector of claim 1, wherein the second end of the conductive pin does not contain a spring like element.

3. (Original) The header connector of claim 1, wherein the second end of the conductive pin is substantially flat.

4. (Original) The header connector of claim 1, wherein the conductive pin moves longitudinally within the first passageways when the header connector is assembled to a printed circuit board.

5. (Original) The header connector of claim 1, wherein the shield blades are fully inserted into the second passageways of the header body.

6. (Original) The header connector of claim 1, wherein the intermediate portion of the shield blade has a generally right angle shield portion.

7. (Original) An interconnect system comprising:

(a) a printed circuit board comprising a plurality of surface mount pads and a plurality of conductive vias;

(b) the header connector of claim 1; and

(c) means for holding the header connector to the printed circuit board,

wherein when the header connector is assembled to the printed circuit board, each conductive pin of the header connector move, in relation to the front wall of the header body, longitudinally in the first passageway to contact the surface mount pads and the second end of the shield blades of the header connector mate with the conductive vias in the printed circuit board.

8. (Original) The interconnect system of claim 7, wherein the means for holding the header connector to the printed circuit board is provided by frictional force created when the shield blades mate with the conductive vias on the printed circuit board.

9. (Original) The interconnect system of claim 7, wherein the conductive pin does not contain a spring like element on its second end.

10. (Original) The interconnect system of claim 7, wherein the second end of the conductive pin is substantially flat.

11. (Original) The header connector of claim 7, wherein the shield blades are fully inserted into the second passageways of the header body.

12. (Original) The header connector of claim 7, wherein the intermediate portion of the shield blade has a generally right angle shield portion.

13. (Original) A method of assembling an interconnect system comprising the steps of:

(a) providing a printed circuit board comprising a plurality of surface mount pads and a plurality of conductive vias;

(b) providing a header connector of claim 1; and

(c) assembling the header connector to the printed circuit board such that the shield blades in the header body mate with the conductive vias in the printed circuit board and the

conductive pins in the header body move longitudinally to make contact with the surface mount pads in the printed circuit board.

14. (Original) The method of claim 13 further comprising the step of holding the header connector to the printed circuit board.

15. (Original) The method of claim 14, wherein frictional force created when the shield blades mate with the conductive vias on the printer circuit board holds the header connector to the printed board.

16. (Original) The method of claim 13, wherein the shield blades of the header connector are fully inserted into the second passageways of the header body.